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ABSTRACT

The Perach Tutorial Project, in which university students tutor Israeli children from socially disadvantaged areas in mathematics and reading, was originally designed for pupils in grades 5-8. This study investigated its use with children in grades 3, 4, 6, and 7 tutored for the regular one-year period or for two years. At each grade level, 11 classes were selected, and students within each class were assigned to the various treatments. During the second year, the type of work carried out by tutors became less academic. Tutored children tended to manifest greater gains in mathematics than in reading, with the greatest change in mathematics for those tutored for one year in grade 6. In reading, children tutored for two years in the lower grades seemed to benefit more, while older children profited more from one year of tutoring. Overall, tutoring did not bring children up to the level of the rest of the class. There was little advantage for tutoring for two years, but a slight advantage for tutoring in the upper grades. No differences were found among groups concerning schools or social self-concept, or social acceptance by peers. Sample items and questionnaires are contained in appendices. (MNS)

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The Effect at Different Grade Levels of One and Two Years of Tutoring

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I. Introduction

During the initial five years of its existence, the Perach Tutorial Project was going through the process of establishment. Project management focused its efforts on setting up an efficient nationwide organizational structure. Throughout this period the original underlying philosophy of the project remained essentially unaltered. After administrative matters were functioning smoothly, greater interest and concern arose for improving project outcomes. This concern created a situation which necessitated a closer examination of the basic operating principles.[1]

The results of a two-year comprehensive evaluation study (Eisenberg et al., 1980) which were reinforced by comments from school staff and university lecturers, led to a re-examination of the following aspects of the project:

1. whether the minimal guidance provided to tutors gives sufficient support to be efficient;
2. whether Perach should include younger children in its target population, i.e., from Grades 3 and 4; and
3. whether children should be tutored for two years instead of the usual one year.

With respect to the issue of tutor guidance, it has now become accepted in Perach that more guidance than that originally envisioned should be given to tutors. Consequently, various attempts are being made at the different universities in which Perach operates to provide more group and individual help to the tutors.

Concerning the other two matters, i.e., including younger children in the project and extending tutoring over a two-year period, Project management would like empirical evidence indicating the value of these approaches before altering policy. The purpose of the present study has been to try out these two ideas on a small scale and to evaluate

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[1] For the major principles of operation, see Attar 1978.

them with respect to both implementation and their effects on the children.

Extending Tutoring to Grades 3 and 4

Since its inception, Perach has aimed at children in Grades 5-8. This age group was felt to be most suitable for a one-to-one tutorial project whose focus was not purely academic but motivational as well. Children in these grades show a growing awareness of the relationship of schooling to their later adult lives, yet they are still quite susceptible to the influence of adults. Thus, Perach chose these children with the idea that tutors could provide them with the necessary impetus at a time in their lives just preceding critical educational decisions.[2]

High school children (i.e., children beyond Grade 8) were considered less suitable for the project since, being highly peer-oriented, they would be less subject to the influence of a tutor. Moreover, the high school system in Israel is such that a child not studying in a college preparatory curriculum is generally learning an occupation, meaning that important educational decisions have already been made.

With respect to younger children, several factors have until now discouraged Perach from going into classes below Grade 5. First of all, many tutors have expressed a lack of confidence in their ability to establish a meaningful relationship with a younger child; specifically they have shown concern about finding subjects in common with a younger child. Secondly, a younger child could not be expected to travel alone in order to meet a tutor. The fact that the tutor would always have to go to the child would place a burden on the tutor and also prevent the child from experiencing the world outside his own community.

While the reasons for not tutoring older children are still considered valid by Perach management, a number of factors has led to a reconsideration

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[2] The rationale for selecting children in Grades 5-8 was set out in the 3-year plan for Perach for 1976-79: "The program is directed specifically towards elementary and junior high school pupils (5th to 8th grades) as a means of providing the underpriviledged pupils with a boost to help them get into high school, and to provide them with the motivation and self-discipline to succeed." (Attar, 1978).

of working with younger children:[3]

1. Numerous studies have shown that the disadvantaged child already lags behind in school in the lower grades (for example see Smilansky, 1958; Coleman, 1966; Har-Paz, 1972). The argument is, therefore, that the child should be given a tutor as soon as possible in his schooling before self-confidence has been severely damaged. In addition, data show that most Perach tutors spend a lot of time with their children either doing homework or studying (Eisenberg et al., 1980) and that many of these tutors work with their children on basic verbal and computational skills. Therefore, it makes sense to work with children at the time when they are learning these basic skills, that is, in the lower grades.

2. Indications from school counsellors show that tutors generally have an easier time establishing a good relationship with a younger child as compared to with an older child. The younger child relaxes more quickly and opens up to the tutor earlier in the relationship.

3. Perach data indicate that children in Grades 5-6 are more positive about meeting with their tutors every week than older children (Eisenberg et al., 1980), perhaps because they have fewer conflicting activities. It could be expected that children in even lower grades would be equally as positive.

4. Going into lower grades does not present any administrative problem for Perach. Since Perach is already working in the elementary schools no reorganization or extra administrative work would be required. Moreover, Perach could work in lower grades in the schools which are nearest the university student residences in order to alleviate the problem of transportation.

Two Years of Tutoring Versus One Year

The original idea in Perach was to assign a tutor to a child for only one academic year. Tutoring was expected to provide him with the necessary

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[3]It should be noted that in the past there have always been some children in Perach from grades other than fifth to eighth. Each year about 5-8% of Perach children come from Grade 9 and another 3-5% from other grades. Particular circumstances (such as the existence of a junior high school in an area) have influenced the participation of these children. Perach policy and practice have been, however, to concentrate on Grades 5-8.

"push" so that he could continue on his own. Not only was one year considered sufficient but the feeling prevailed that it was unfair to give tutors to some children for more than one year when there were so many in need. By accepting new children every year, more children could be given the experience of having a tutor.

The above policy was based on the assumption that a child meets a tutor at least 56 times during the school year. However, the findings of the evaluation study of Perach indicated that only about 60% of the children were meeting with their tutors this minimal number of times. The facts are that tutoring gets underway in November or December and that holidays, examination periods at the university, and army reserve duty for the tutors all reduce the amount of time available to the tutor-child pair. Moreover, most tutors claim that it takes time to establish a meaningful relationship with a child before serious work can be done (Eisenberg et al., 1980).

Taking all of these factors into account, the question arises as to whether the actual amount of time spent on tutoring during a school year is sufficient to evoke change in the children. Since the university academic year begins later than that of the elementary schools, tutors cannot get into the field before November. Also, since the project is semi-voluntary[4] and university students are usually quite busy with their own affairs, it is impossible to request them to meet the children more than twice a week.

A solution would be to have children participate in Perach for a two-year period rather than the usual one year. There exist, however, conflicting thoughts about the value of such an approach. Those who oppose the idea claim that the child who is tutored for two years would become too dependent on the tutor for both personal and academic assistance rather than learn to become self-sufficient. Observations indicate that in many cases this dependency develops after only one year of tutoring.

Another argument against relates to tutor turnover from year to year. Given that the same tutor does not necessarily work both years with the same child, it is possible that tutoring might be effective during one

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[4]Tutors receive a partial tuition rebate for their participation.

year but not during the next (particularly since it appears that success depends to a large extent on the proper matching of tutor and child). One must ask what kind of effect this situation might have on the child.

On the other hand, supporters of tutoring for two years claim that the more time a child spends with a tutor the more likely the child will reap the benefits of individual help. A number of studies indicate that an important factor influencing learning in general is the amount of time spent on it. (See Cloward, 1960; Carrol, 1963; Lewy & Chen, 1974; Hanson & Ross, 1975; Keeves, 1976.) In a tutoring situation the time factor may affect not only cognitive gains but also self-concept and attitudes as well. One might assume that during two years of tutoring a child would make greater strides in the cognitive domain than he would during only one year. His greater academic success should more strongly reinforce his self-concept and influence his attitudes towards school in a positive direction.

Having the same tutor for two years would seem to be the ideal situation since the relationship would already be established at the start of the second year and the tutor would already be familiar with the child's problems. Hence, more time could be devoted to helping the child. Nevertheless, even with a different tutor each year, the tutoring activity for a two-year period could be quite beneficial because the time spent on academic work, enrichment, etc. would be double.

II. Evaluation Design

The two year research design described below was created to enable the investigation of both working with younger children and the effects of longer tutoring time. It provided data on children in Grades 3, 4, 6 and 7 who had been tutored for the regular one-year period as well as on children who had been tutored for two years.

Research Measures

No distinction was made between the two studies with respect to the type of data collected and the research instruments employed. The questions asked in both studies were essentially the same:

1. Is one group of children exhibiting more cognitive and affective changes than the other group(s)?
2. Are there any differences in implementation and in satisfaction among the groups?

With respect to working with younger children, comparisons were made between the results of the lower grade children to those of the upper grade children. In the other instance, the effect of time on tutoring outcomes, results were compared for two year tutoring, one year tutoring and no tutoring.

In order to measure the affective and cognitive changes in the children, achievement tests and a personal questionnaire were administered. The achievement tests were standardized examinations in the areas of reading comprehension and arithmetic, suited for the child's particular grade level.[5] Similar subject matter tests for adjoining grade levels contained a number of identical items (i.e., anchor items) which enabled an examination of the children's progress from one grade to the next over the two-year period. The distribution of the anchor items by test is shown in Table 1.

The personal questionnaire included sociometric measures as well as measures of school self-concept and attitudes towards school.[6]

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[5] See Appendices A1, A2, A4 and A5 for sample questions and reliability statistics. Tests were adapted from standardized tests of the Israeli Ministry of Education and in the case of mathematics, some items were adapted from tests of the Educational Testing Service in the U.S.

[6] See Appendices A3 and A6 for the personal questionnaires used for each grade level. Items were used in previous Perach evaluations, several having been adapted from other surveys carried out in Israel.

Table 1: Total Number of Items and Anchor Items per Test

Test	Total # Items	# Anchor Items
Mathematics		
Grade 3	24	11
Grade 4	27	
Grade 6	28	21
Grade 7	31	
Reading		
Grade 3	26	21
Grade 4	27	
Grade 6	30	12
Grade 7	29	

Testing took place at the start of the school year before tutoring got underway and towards the end of the school year both during 1980-81 and 1981-82. Entire classes were tested and the gains of the Perach groups were compared to those of the control group as well as to those of the class as a whole.

Towards the end of each school year, a questionnaire was sent to all tutors of the children participating in the study. In addition, a number of schools were identified in which children in both of the grades in question (3rd and 6th the first year and 4th and 7th the second year) were being tutored and the tutors of these children were also sent questionnaires. During the first year 109 questionnaires were sent with a return rate of 71% and during the second year 149 questionnaires were sent with a return rate of 51%. (The low return rate for the second year appears to be a direct result of the war in Lebanon which broke out shortly after the questionnaires were sent.)

In general, the purpose of this questionnaire was to measure the satisfaction of the tutors as well as to provide information regarding their relationship with the child and the content and location of the tutorial meetings (see Appendix A7).

Finally, the extent to which children dropped out of the project was recorded and analyzed.

Research Groups

During the 1980-81 school year, children in Grades 3 and 6 served as the research population. At each grade level, 11 classes were selected from among 9 schools which met the following requirements:

1. At least 6 children in each class had been recommended to Perach.
2. No children in any of the classes had had Perach tutors in the past.
3. The schools were 8-year elementary schools rather than 6-year schools[7] and they were situated near the university campuses.

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[7]There are two school structures which exist in Israel: 1) an 8-year elementary school with a 4-year high school, and 2) a 6-year elementary school, a 3-year junior high school and a 3-year senior high school.

Sampling was carried out by class so that within-class comparisons could be made in addition to comparisons among the study samples as a whole. In each class the pool of children recommended for tutoring was divided into those children who would be assigned tutors for the year and those who would serve as a control group. During the second year those who had been tutored were to continue being tutored, while the control group was to be divided into two, with half of the children receiving tutors and half not (see Figure 1). The rest of the children in each class were to serve as a comparison group throughout the study. Thus, at the end of the two year period, the following four groups were to be found in every class:

Group 1: Children who had been tutored for both years.

Group 2: Children who had been tutored for only one year.

Group 3: A control group.

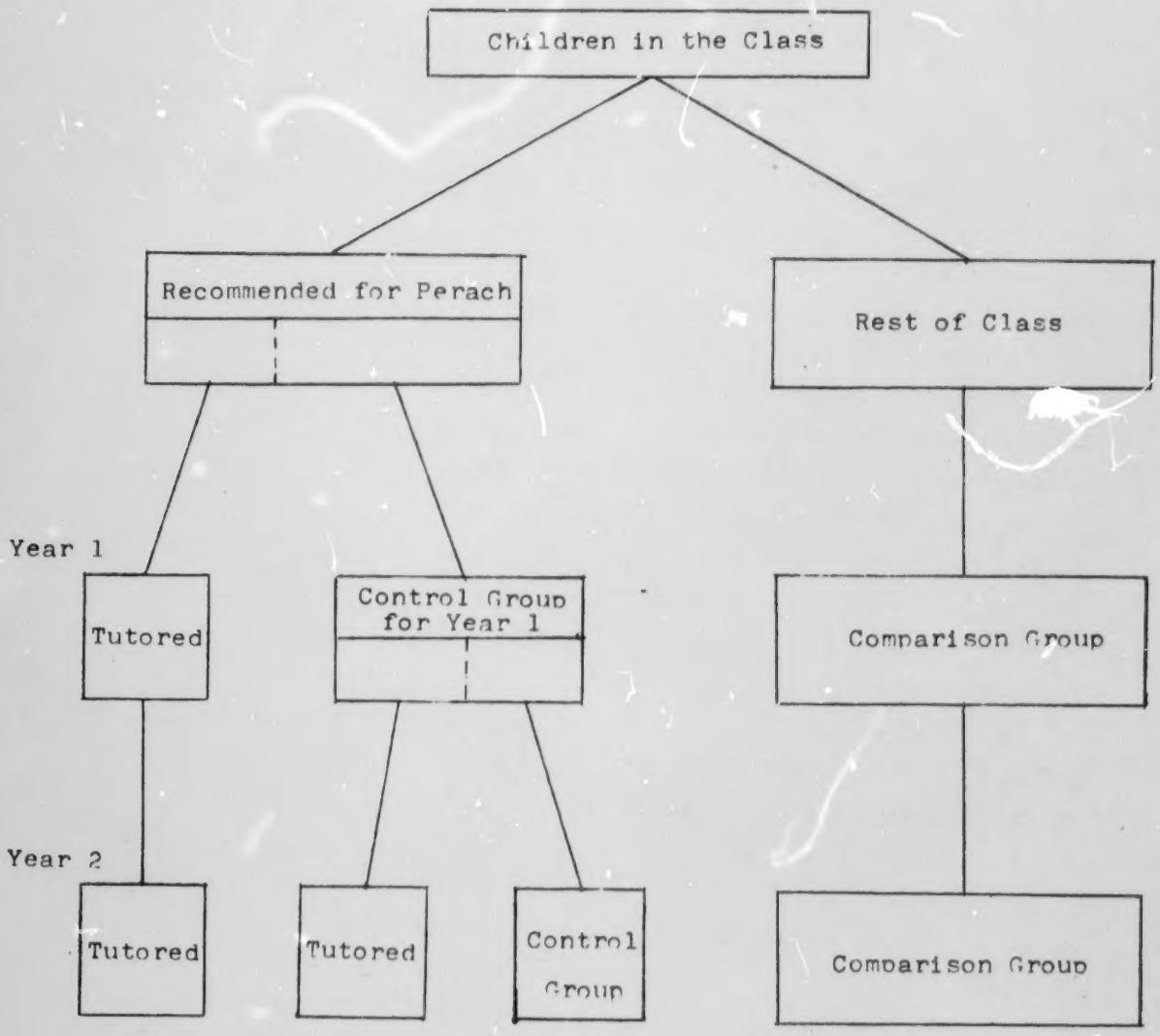
Group 4: A comparison group made up of the other children in the class.

From the outset an attempt was made to assure as much likeness as possible among the first three groups. Those children recommended for tutoring were sorted into threes, whenever possible, on the basis of similarity of past achievements and teacher assessments of motivation and difficulties. From each triplet, one child was randomly assigned to Group 1 during the first year with the other two going into the control group. During the second year the two from the control group were randomly placed in Groups 2 and 3. When matching into threes could not be done, pairs were created. During the first year of the study one child from each pair was given a tutor, while during the second year, half of the remaining children in this situation were assigned tutors and half were not.

Methodological Problems

A.) Various factors operated in the field during the second year of the study to interfere with the carefully worked-out design. First of all, some children, both who had had tutors the year before and who had not, refused to take on a tutor. These numbers were not great and in the case of the latter, i.e., those who were supposed to be tutored for the first time, substitutions were made whenever possible. With respect to the

Figure 1: Two-Year Research Design



former, i.e., those not wishing to continue a second year, there were four children from Grade 7 and three children from Grade 4. Reasons for not wanting to continue were varied, thus no generalizations can be made con-concerning this phenomenon.

A second difficulty arose in three of the nine schools as a result of lack of full cooperation from the coordinators in adhering to the dictates of the research design. As a result there were many instances of children who had been tutored the first year not being matched with a tutor during the second year. This problem was particularly felt in Grade 7.

Finally, there were several cases in which children moved away and had to be discarded from either experimental or control groups.

Altogether these difficulties resulted in one school being eliminated from the study entirely (which included two Grade 7 classes) and in 9 out of 64 children not being matched in Grade 4 (or 14%) and 27 out of 57 children not being matched in Grade 7 (or 47%).

In a number of schools additional names were offered as candidates for tutoring. After comparing these children to those already recommended from the previous year, it was decided to accept mot of them into the control group pool from which Groups 2 and 3 were selected. In this manner 18 children were added to the Grade 4 pool and 4 children to Grade 7.

The final figures from the distribution of study samples are presented in Table 2. These numbers include all children who were matched with tutors for Groups 1 and 2 according to the research design.

B.) A second problem which may have affected the results of this study is related to the fact that a war broke out in Israel towards the end of the second year of the study (in June 1982). As already observed, this fact resulted in a low return rate for the tutor questionnaire. In addition it may have had a bearing on the achievement test scores and personal questionnaire results since they were administered in the early days of the war.

Table 2: Distribution in Raw Numbers of Research Samples by Grade Level

	Grades 3, 4	Grades 6, 7
Group 1 (2-year tutoring)	22	18
Group 2 (1-year tutoring)	33	12
Group 3 (control)	35	34
Group 4 (comparison)	189	113

III. Operational Comparisons

Before the cognitive and affective impact of tutoring is discussed, the operation of the project in the field will be examined with respect to the research questions. The main purpose of this section, therefore, is to look at how tutors work with children of different ages and to see whether work patterns differ when the child is in Perach for a second time as opposed to when he is new to the project.

Recommendation of Children to Perach

Recommendations to Perach are generally made by the children's teachers in collaboration with the Perach coordinators. In principle, Perach is interested in accepting children who possess potential, who do not have serious emotional problems, and who could benefit from the individual attention of a tutor. The impression received from teachers, school principals, and Perach workers in the field is that the child's school achievement is a primary component in determining his suitability to Perach.

In order to see whether this criterion operates equally at the lower grades and the upper grades, it was decided to compare the children recommended for tutoring in Grades 3 and 6 on their class academic standing at the start of this study. Accordingly, in each class, all children were ranked on the basis of their pre-test scores in Mathematics and Reading. Next each class was divided into quartiles on the basis of this ranking. The distribution of children recommended to Perach with respect to position in class can be seen in Table 3.

As can be seen, more than 2/3 of the children recommended to Perach at both grade levels tended to come from the lower half of their classes (Q_1 and Q_2) both with respect to their reading level and their mathematical skills. Moreover, about 40% come from the bottom quarter of their class. If one considers that all of these schools are rated as disadvantaged schools by the Ministry of Education, then this means that a high proportion of very low-achieving pupils are included in Perach. Of relevance at this point, however is that the distributions are similar for both grade levels.

Table 3: Distribution in percentages of children recommended for tutoring by grade with respect to position in class*

	Q_4	Q_3	Q_2	Q_1	(n)
Grade 3					
Math	14.3	17.5	30.1	38.1	(63)
Reading	10.3	15.5	25.9	48.3	(58)
Grade 6					
Math	9.2	18.5	32.3	40.0	(65)
Reading	11.1	15.9	31.7	41.3	(63)

*Position in class expressed in quartiles; Q_4 = highest quartile

Intensity of Work and Dropping Out

The basic measure used to determine how intensely the tutors worked throughout the year was the sum of scholarship money awarded to them at the end. As explained in an earlier report (Eisenberg et al., 1980), tutors are expected to hold a minimum of 56 meetings with their children as well as attend monthly tutor meetings. Failing to meet these requirements, they are penalized by a reduction in the tuition rebate which they are awarded. Below a certain minimal level of activity, they are not awarded any sum. Hence, the scholarship awards can serve as a rough indication of the intensity of the tutoring experience. Moreover, those who were not awarded anything are viewed as drop-outs from the project.

In Table 4, figures are presented by grade level for the scholarship sums awarded to the tutors of the children in the research samples.

On first inspection, it would appear that the proportion of tutors receiving a full scholarship award decreases inversely with the child's grade. In other words, tutors of children in the lower grades worked more intensely with their children than tutors of children in the higher grades. This may have been true, however, a closer examination of the data indicate that, overall, scholarship awards in 1982 (Grades 4 and 7) tended to be distributed differently than those in 1981, with a much greater proportion of tutors receiving a "partially-low" sum. A comparison of all awards granted by Perach in 1981 and 1982 indicated this to be typical of all grade levels. It was explained by Perach workers that due to the war in Lebanon which began in early June 1982, many tutors became involved with the war effort, "disappearing" from Perach. While some tutors actually dropped out of the project at this late stage, others just did not fill out the necessary forms to report on their tutoring activities, not caring whether they received the full award or not.

Disregarding the differences between the two years and looking only within each school year, one still finds that tutors in the lower grades dropped out less and received full scholarships more often than tutors of the children in the higher grades.

Comparing the scholarship award distributions by research group, i.e., by whether the child was in Perach for one year or two years, one finds few differences (Table 5). Dropping out was lowest in the two-year group

Table 4: Distribution in percentages of 1981 and 1982 scholarship awards for tutors of children in study samples

Scholarship Sum	Grade 3	Grade 4	Grade 6	Grade 7
Full award (91%-100%)	62.5	52.7	48.8	33.3
Partial-high (70%-90%)	15.6	12.7	19.5	13.3
Partial-low (40%-69%)	9.4	20.0	7.3	33.3
No award	12.5	14.5	24.4	20.0
(n)	(32)	(55)	(41)	(30)

Table 5: Distribution in percentages of 1982 scholarship awards for tutors of Grades 4 and 7 children by number of years child in Perach

Scholarship	GRADE 4		GRADE 7	
	2-year	1-year	2-year	1-year
Full award	50.0	54.5	38.9	25.0
Partial-high	22.7	6.1	11.1	16.7
Partial-low	18.2	21.2	27.8	41.7
No award	9.1	18.2	22.2	16.7
(n)	(22)	(33)	(18)	(12)

in Grade 4, while all other groups had a drop-out rate similar to the general average yearly rate in Perach of about 17% to 19%.

Tutoring Sessions

Information regarding the frequency and nature of tutorial meetings was obtained from the tutor questionnaire administered in 1981 and 1982. Below, relevant comparisons will be presented, first, with respect to the grade level of the child being tutored and, secondly, with respect to the number of years the child was tutored.

Comparisons by grade level. More difficulties were expected to be encountered by tutors who were working with younger children. On one hand, meetings would have to be held taking into consideration the relative lack of mobility of the younger child and, on the other hand, the greater age difference might result in the tutor's role becoming one of teacher rather than older sibling or friend (See Eisenberg et al., 1982, pp. 33-36).

As can be seen from Table 6, only in Grade 3 was it necessary to hold meetings most of the time at the child's house. With respect to the other grades, including Grade 4, distributions concerning location of meetings were more evenly split among the various possibilities.

With respect to frequency of meetings there was a slight though not significant tendency for more tutors of Grade 7 children to hold fewer than two meetings/week, while in the other grades, if there was a deviation from the norm of 2 meetings/week, it was to hold more meetings (see Table 6).

When asked whether they had difficulty holding meetings regularly, tutors of Grade 3 children reported least often encountering this problem (see Table 6). The tutors from the second year of the study (Grades 4 and 7) most often had trouble in this area, which corresponds with the finding that scholarship awards were considerably lower for that year than in the previous year.

No differences were detected by grade level with respect to whether tutors had problem finding activities to fill up the tutoring time. About half of them never had trouble while the other half replied that they sometimes had difficulty.

Table 6: Comparison by grade level, of tutors' responses concerning meetings and tutor-child relationship (in percentages)

	GRADE			
	3	4	6	7
Where are meetings generally held?				
At tutor's house	11	39	18	22
At child's house	70	29	42	35
Both	16	28	38	43
Other	3	4	2	-
(n)	(37)	(51)	(40)	(23)
How many meetings/ week in general?				
1	-	2	2	9
2	81	88	82	91
3	19	10	15	-
(n)	(37)	(51)	(40)	(23)
Difficult to hold regular meetings?				
yes	33	51	41	50
no	67	49	59	50
(n)	(36)	(51)	(39)	(24)
Difficult establishing relationship?				
Very much	5	-	5	17
Somewhat	16	22	22	21
No	79	78	72	62
(n)	(37)	(51)	(40)	(24)
Satisfied with relationship?				
Very much	38	43	35	26
Somewhat	59	51	58	61
No	3	6	7	13
(n)	(37)	(51)	(40)	(23)

Few systematic differences were obtained by grade level with respect to what the tutors did with the children when they worked on school-related activities. Nearly all tended to spend some time on material taught in class and on homework, while less time was spent on remedial work. The vast majority of tutors mentioned working on Mathematics (83% on the average - from 75% in Grade 6 to 94% of the tutors in Grade 3). English was one of the subjects dealt with in the upper grades, while in the lower grades it was mentioned only in the few cases in which it was part of the school curriculum.[8] The greatest differences were encountered with respect to Reading. Nearly all of the tutors in Grade 3 (94%) mentioned working on this subject, in Grades 4 and 6 only a little more than half of the tutors dealt with this (59% and 52%, respectively), and in Grade 7 almost no one (15%).

Comparisons by length of time child in Perach. Analyses were carried out on the tutor data collected in the second year of the study in which tutors were divided up into two groups on the basis of how many years their child had been tutored (See Table 7).

With respect to frequency of meetings, there were few differences between the groups, other than a slight tendency for tutors of second year children to meet less frequently and to express having encountered some problem in holding regular meetings.

The greatest difference between the groups was discovered with respect to the content of the tutorial sessions. Tutors of children who had been tutored the year before tended to spend less time on studies and more time on enrichment. They devoted themselves less often to material being taught in class, and less often worked on homework.

When asked whether they had noticed any change in the child as a result of the tutoring activity, the tutors of second-year children reported less often noting changes in the areas of

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[8]Most children in Israel begin to study English in Grade 5.

Table 7: Comparison of tutors' responses on selected questions, by number of years child in Perach (in percentages)

	1-year	2-year
Difficult to hold regular meetings?		
yes	50	61
no	50	39
(n)	(22)	(18)
How many times per week?		
1	-	6
2	90	94
3	10	-
(n)	(21)	(18)
What is the emphasis of the tutoring?		
Studies	43	18
Motivation	5	6
Behavior	5	12
Self-Concept	24	23
Enrichment	5	18
Other	19	23
(n)	(21)	(17)
To what extent work on material taught in school?		
Very much	22*	20
Somewhat	72	40
Not at all	6	40
(n)	(18)	(15)
To what extent work on homework?		
Very much	63	43
Somewhat	37	43
Not at all	-	14
(n)	(19)	(14)

Table 7 (cont'd)

	1-year	2-year
Did you discern improvement in the child?		
A. In achievement?		
Very much	25 ▲	-
Somewhat	60	76
None	10	24
Negative change	5	-
(n)	(20)	(17)
B. Motivation?		
Very much	30	18
Somewhat	55	41
None	10	41
Negative change	5	-
(n)	(20)	(17)
C. Self-Concept?		
Very much	47 ▲	22
Somewhat	37	72
None	16	6
Negative change	-	-
(n)	(19)	(18)
D. Behavior?		
Very much	42	35
Somewhat	26	53
None	26	12
Negative change	5	-
(n)	(19)	(17)

*Chi-squares significant at p= .05 level.

▲Chi-squares significant at p = .10 level.

achievement, motivation and self-concept.[9]

Tutor-Child Relationship

Returning to Table 6 and the comparisons by grade level, one finds that the tutor-child relationships in Grade 7 were the least satisfactory. Tutors in this grade reported slightly more often encountering problems in establishing a relationship and, on the whole, tended to be least satisfied with their relationship with the tutored child.

As for tutors of first-year children versus tutors of second-year children, no differences were found with respect to these variables.

Summary

With respect to the comparisons by grade level, it appears that working with children in the lower grades was slightly easier. This was indicated by the lower dropout rate in Grades 3 and 4, the higher frequency of tutors receiving full awards, and by the tutors' reports themselves concerning regularity of tutorial sessions. Tutors' responses indicated that in Grade 7, relationships were somewhat more difficult to establish and regularity of meetings was harder to maintain.

Comparisons made on the basis of how long the child had been tutored indicated no effect of this variable on scholarship awards, dropout rate and the tutor-child relationship. An important difference was ascertained with respect to the content of tutoring sessions. It seems that the type of work carried out by tutors of children in their second year in Perach differed from that of tutors whose children were in Perach for the first time. Their orientation, on the whole, was less academic, treating school-related matters less directly. This means that two years of tutoring, in practice, was not exactly what had been envisioned at the start of the study, i.e., two years of an equal emphasis on studies and other activities.

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[9] Calculations on all of these items taking into account grade level and one-year vs. two-years of tutoring indicated that length of tutoring was the differentiating factor and not grade level.

IV. Comparisons on Cognitive Measures

In the area of cognitive change, the research groups were compared to each other on three basic measures: 1) overall test results in Mathematics and Reading each year; 2) scores on anchor items over a two year period; and 3) relative academic position in class.

Data from the first year of the study are presented below for tutored children (E), control children for that year (C), and the rest of the class (R).[10, 11] Second year results are shown for children tutored two years (E_2), children tutored one year (E_1), the control group for that year (C) and the others in the class (R).

Only those children who had taken all four tests in at least one of the subject areas (i.e., pre- and post-tests both years in Reading and/or Mathematics) have been included in the analyses. In addition, Perach groups contain only those children who had actually been tutored. Dropouts, as defined in the previous section, have been eliminated on the basis of the argument that they have neither experienced a prolonged tutoring relationship so as to be in the experimental group, nor have they been "untouched" so as to be part of the control group. Moreover, their numbers are too small for them to constitute a separate comparison group.

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[10] When reference is made to the first year and second year of the study, this notation will be used to indicate the research groups.

[11] It was originally planned to create a sub-group from the rest of the class which would consist of only those children who had scored 85% or less at the start of the study. This was considered necessary in order to reduce the ceiling effect which tests of this nature generally have for the brightest children. Calculations indicated that the gains made by this sub-group were very similar to those made by the entire R population. Concequently, it was decided to leave R intact so as not to lost the actual level of the other children to which Perach children, it was hoped, would reach.

Achievement Tests

In Tables 8 and 9, the pre- and post-test scores (in percentages) on the Mathematics and Reading achievement tests are shown for the different research groups which existed each year of the study. As can be observed from the pre-scores, the groups created from the pool of children recommended to Perach tended to be similar to each other and differed from the rest of the class (R). The latter group scored significantly higher on the average in all cases ($p < .000$).

Comparing pre- and post-test scores by test, one finds that within groups, statistically significant gains were made about equally often by E and C groups. Group sizes varied greatly, and particularly in Grades 6 and 7, n's were very small, meaning that statistical significance was difficult to obtain. With this in mind, Figure 2 was constructed to demonstrate pictorially the actual movement of the groups from pre- to post-testings.

From Figure 2 one sees that in the area of Reading, gain scores tended to be quite similar for all groups including R. In Grade 3 gains were identical for all groups, while in Grades 6 and 7 experimental groups (E in Grade 6, and E_1 and E_2 in Grade 7) showed only slightly greater progress than C. In Grade 4, E_2 and C manifested similar change, however E_1 did not change at all.

The picture differs somewhat with respect to Mathematics. At all grade levels, children tutored for one year increased their scores more than the control children. With respect to the children tutored for two years, one finds that in Grade 4 they progressed less than C while in Grade 7 they progressed more than C and about the same as E_1.

Analyses of covariance were carried out in which post-test scores were compared, controlling for pre-test scores on the first test taken in the particular subject matter. In other words, post-test scores from Year 1 were compared, controlling for pre-test scores for that year, and post-test scores from Year 2 were compared, controlling for pre-test scores from the first year. In Table 10 comparisons are made between children tutored for one year and their control groups. As can be seen

Table 8: Means ($\bar{X}$) and standard deviations (s.d.) on achievement tests (Year 1)

	E		C		R	
	Pre	Post	Pre	Post	Pre	Post
Math 3						
$\bar{X}$	33.17***	50.00	35.64**	44.40	49.62***	68.95
s.d.	13.25	14.73	18.59	21.42	19.49	21.49
(n)	(18)		(42)		(177)	
Read 3						
$\bar{X}$	32.80**	42.20	39.76***	49.46	51.92***	61.60
s.d.	14.89	19.96	15.66	12.52	14.94	17.73
(n)	(15)		(41)		(155)	
Math 6						
$\bar{X}$	47.67***	67.11	54.24	56.97	64.00***	68.57
s.d.	13.15	11.53	18.94	19.72	18.65	20.74
(n)	(9)		(37)		(110)	
Read 6						
$\bar{X}$	57.88Δ	65.38	53.29*	57.68	65.60***	70.71
s.d.	16.19	14.74	15.83	15.32	13.65	13.11
(n)	(8)		(34)		(109)	

Δ $p \leq .10$
* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

Table 9: Means ($\bar{X}$) and standard deviations (s.d.) on achievement tests (Year 2)

	E_2		E_1		C		R	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Math 4								
$\bar{X}$	41.33	45.33	35.00***	52.10	41.95*	53.43	56.63***	68.75
s.d.	14.03	17.97	16.49	23.06	21.25	23.60	21.42	21.51
(n)	(18)		(21)		(21)		(177)	
Read 4								
$\bar{X}$	43.00*	50.87	48.37	48.79	45.91*	53.45	60.03***	64.92
s.d.	15.43	15.14	16.82	17.62	16.13	12.94	16.38	15.70
(n)	(15)		(19)		(22)		(155)	
Math 7								
$\bar{X}$	42.33$^{\Delta}$	55.78	38.70*	52.20	49.15***	59.74	63.63***	69.20
s.d.	16.64	13.33	15.98	14.90	17.90	18.66	18.74	18.04
(n)	(9)		(10)		(27)		(110)	
Read 7								
$\bar{X}$	61.62	67.50	57.75	62.50	62.69	66.88	71.99*	74.41
s.d.	9.72	12.19	16.95	12.43	19.15	20.52	16.47	16.67
(n)	(8)		(8)		(26)		(109)	

$^{\Delta}$ $p \leq .10$
* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

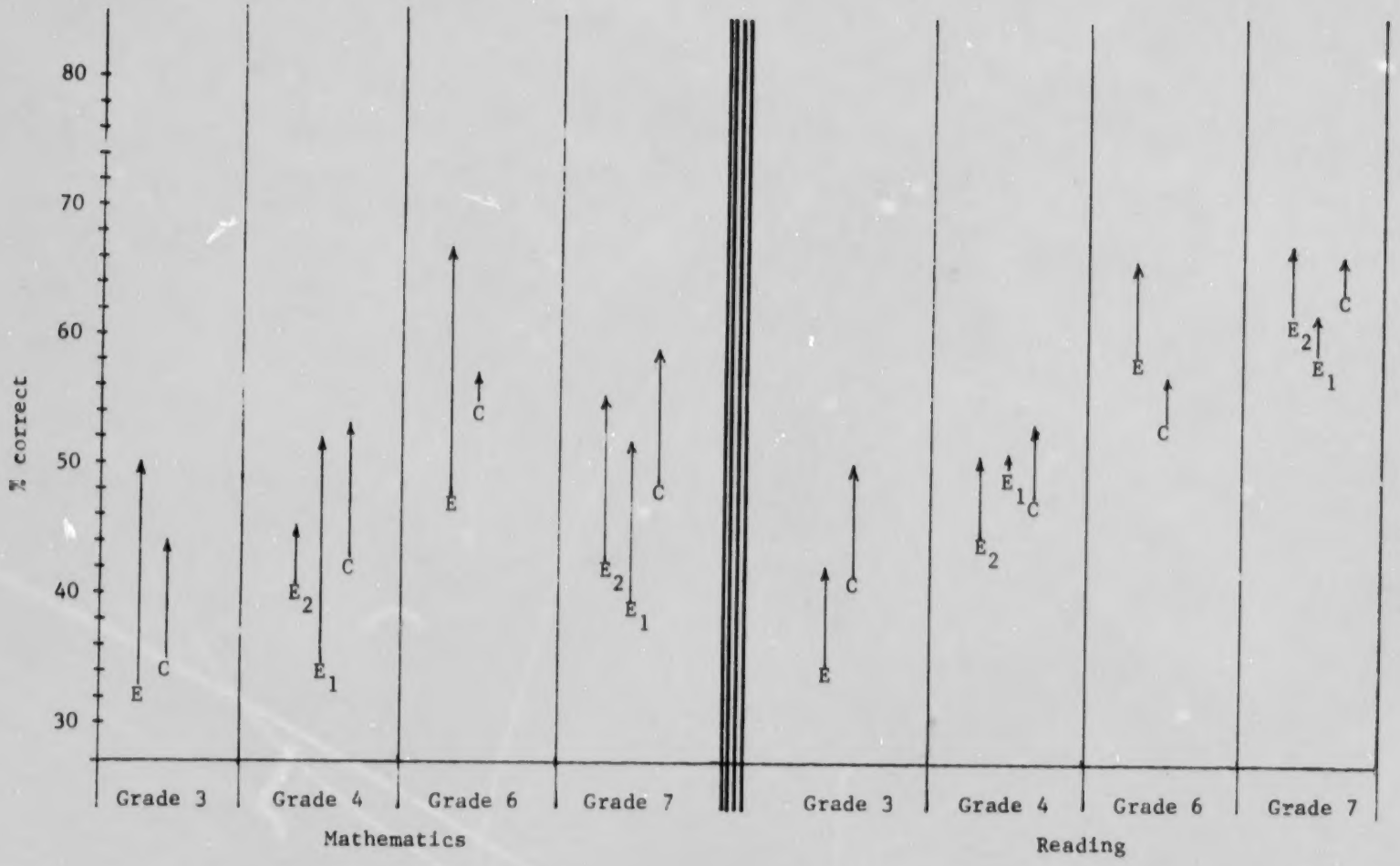

Figure 2: Graphical representation of gain scores on achievement tests*

*Arrow head at mean score for post-test.

Table 10: Adjusted and unadjusted post mean scores ($\bar{X}$) in Mathematics and Reading controlling for pre-test for one year of tutoring and control group

Mathematics	1-year	Control
Grade 3		
$\bar{X}$	50.00	44.40
(n)	(18)	(42)
adjusted $\bar{X}$	51.19	43.89
Grade 4		
$\bar{X}$	52.09	53.43
(n)	(21)	(21)
adjusted $\bar{X}$	54.67	50.85
Grade 6		
$\bar{X}$	67.11	56.98
(n)	(9)	(37)
adjusted $\bar{X}$	70.61	56.13**
Grade 7		
$\bar{X}$	52.20	59.74
(n)	(10)	(27)
adjusted $\bar{X}$	57.25	57.87

Reading	1-year	Control
Grade 3		
$\bar{X}$	42.20	49.47
(n)	(15)	(41)
adjusted $\bar{X}$	44.84	48.50
Grade 4		
$\bar{X}$	48.79	53.45
(n)	(19)	(22)
adjusted $\bar{X}$	48.17	53.99
Grade 6		
$\bar{X}$	65.37	57.67
(n)	(8)	(34)
adjusted $\bar{X}$	62.79	58.28
Grade 7		
$\bar{X}$	62.50	66.88
(n)	(8)	(26)
adjusted $\bar{X}$	65.24	66.03

** $p \leq .01$

in 6 out of 8 instances, controlling served to strengthen the scores of the tutored children and subsequently weaken the control group scores.

Looking at adjusted scores, one notes that the tutored children scored higher than control children in Math in Grades 3, 4, and 6 and in Reading in Grade 6. They scored about equal to C in Math and Reading in Grade 7 and lower than the control group in Reading Grades 3 and 4. The only statistically significant difference between groups on the adjusted scores, however, was in Math Grade 6.

In Table 11, the adjusted scores are shown for E_2, E_1 and C groups in Grades 4 and 7. Controlling for pre-test levels tended to improve the post-test scores of the tutored groups, particularly of E_2. Nevertheless, no differences are statistically significant among groups and there are no distinguishing patterns of one group tending to score better than the others.

To summarize this section, no outstanding differences were noted in achievement scores as a result of the tutoring except perhaps in the case of Mathematics in Grade 6 (and to a lesser degree Mathematics Grade 3). Nevertheless, some overall tendencies can be noted. First of all, differences between tutored and untutored groups were more apparent in the area of Mathematics than in the area of Reading Comprehension. Also, where one group tended to improve more than the other, it was usually the tutored group(s) rather than the control group. One fact seems quite clear and that is that children tutored for a second year did not appear to be making greater academic strides than those tutored for only one year.

Anchor Items

As mentioned earlier, each achievement test contained a number of items which appeared on the same subject matter test for the adjoining grade level. For example, some items were included on the Grade 4 test in Mathematics that had been on the Grade 3 test in this area.

The percentage scores on these anchor items are presented over the four testings by research group in Table 12. A simple monotonic progression can be noted for most groups.

The change over the two-year period is pictorially presented in Figure 3. Considerable progress can be noted for all groups.

Table 11: Adjusted and unadjusted post mean scores ($\bar{X}$) in Mathematics and Reading, controlling for pre-test for children tutored two years (E_2), children tutored one year (E_1) and control children (C)

	E_2	E_1	C
Math 4			
$\bar{X}$	45.85	48.92	51.46
(n)	(19)	(24)	(24)
adjusted $\bar{X}$	47.17	48.05	51.28
Reading 4			
$\bar{X}$	50.10	46.46	50.72
(n)	(19)	(24)	(26)
adjusted $\bar{X}$	51.07	45.80	50.63
Math 7			
$\bar{X}$	57.20	52.20	60.10
(n)	(10)	(10)	(28)
adjusted $\bar{X}$	59.91	57.41	57.27
Reading 7			
$\bar{X}$	64.00	57.00	67.70
(n)	(11)	(9)	(28)
adjusted $\bar{X}$	66.18	59.04	66.19

Table 12: Means ($\bar{X}$) and standard deviations (s.d.) on anchor items by research group over four testings

	E_2		E_1		C		R	
	$\bar{X}$	s.d.	$\bar{X}$	s.d.	$\bar{X}$	s.d.	$\bar{X}$	s.d.
Math 3, 4								
Testing I	27.06	15.33	30.48	20.35	32.67	17.47	42.99	22.45
II	45.50	19.13	32.67	20.06	49.29	26.18	64.37	23.59
III	53.00	18.75	43.29	19.85	49.38	26.49	64.53	22.97
IV	55.11	24.72	58.76	23.14	60.05	26.49	74.67	23.45
	(n=18)		(n=21)		(n=21)		(n=177)	
Read 3, 4								
Testing I	27.53	15.20	34.68	14.11	39.27	17.98	49.52	16.56
II	39.00	20.81	48.16	11.14	45.18	13.24	59.67	19.04
III	45.60	17.49	50.37	17.27	47.32	19.06	63.05	17.27
IV	53.40	16.45	50.26	19.20	57.05	12.60	67.82	16.46
	(n=15)		(n=19)		(n=22)		(n=155)	
Math 6, 7								
Testing I	46.22	15.70	40.80	16.86	55.44	20.74	62.57	19.10
II	66.67	12.77	45.60	20.57	59.30	21.53	67.69	20.89
III	51.78	18.56	48.40	17.17	58.81	20.13	72.71	20.53
IV	63.89	14.85	61.80	16.19	68.26	20.56	77.92	18.94
	(n=9)		(n=10)		(n=27)		(n=110)	
Read 6, 7								
Testing I	46.50	19.96	38.12	17.11	48.15	20.49	58.83	20.14
II	61.25	19.95	58.00	24.59	50.08	23.13	66.54	19.10
III	63.12	14.74	53.75	18.96	63.69	21.01	71.66	18.65
IV	70.50	17.46	69.38	17.21	68.00	24.13	75.35	19.06
	(n=8)		(n=8)		(n=26)		(n=109)	

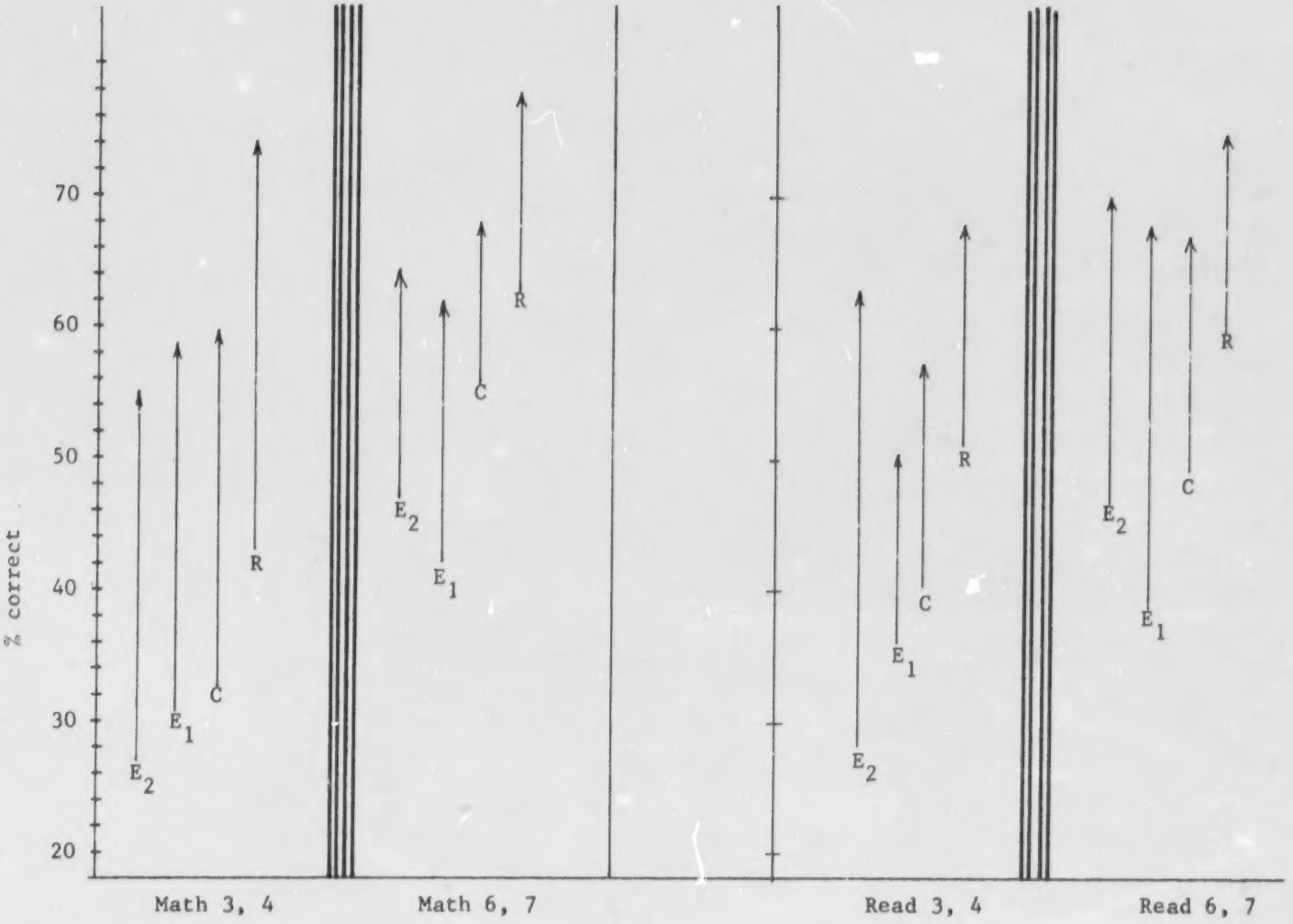

Figure 3: Graphical presentation of gain scores on anchor items over 2-year period*

* Arrow head located at level of fourth testing

In the area of Mathematics, little difference can be observed across groups in the lower grades with respect to their progress. On the other hand, in the higher grades, both one-year and two-year tutored children appear to have made greater progress than the control children.

With respect to Reading in the lower grades, one notes that those children tutored for two years appear to have made the greatest gains, there being little difference between one-year tutored children and the control group. In the upper grades, one-year tutored children gained most while the control group gained least.

Analyses of covariance were carried out on the anchor scores. Results are presented in Tables 13 and 14.

Comparing children tutored for only one year to the control group, one finds that controlling for pre-levels tended to have the effect of raising the mean post-test anchor scores for the tutored children (Table 13). Tutored children scored higher than control children on 6 out of the 8 anchor item scores (all of the Math scores and two of the Reading). Statistical significance was obtained at $p \leq .01$ on Math anchor items in Grade 6. The control group scored higher than the tutored group on Reading anchor items both in grades 3 and 4, statistical significance at $p \leq .10$ obtained in Grade 4.

Looking at the average post-test anchor item scores for E_2, E_1 and C in Table 14, one finds no statistically significant differences among groups on adjusted scores. In Grade 4 no systematic patterns are evident, however, in Grade 7 there is a weak tendency for (E_2 and E_1) to score higher than the control group on anchor items in both Reading and Mathematics.

In summary, the comparison of anchor item scores showed tutored children to be scoring higher than control children after one year of tutoring in Mathematics at all levels and in Reading in the higher grades. After two years of tutoring, a slight advantage was noted for tutored children in the higher grades.

Position in Class

Up to this point, all comparisons among groups have been made by combining the children from the various classes. In this section an attempt has been made to take into account the classroom factor, and to do this, a

Table 13: Adjusted and unadjusted post mean scores ($\bar{X}$) on Mathematics and Reading anchor items, controlling for pre-level for one year of tutoring and control group

Mathematics	1-year	Control
Grade 3		
$\bar{X}$	45.50	40.97
(n)	(18)	(42)
adjusted $\bar{X}$	47.01	40.32
Grade 4		
$\bar{X}$	58.76	60.04
(n)	(21)	(21)
adjusted $\bar{X}$	60.68	58.12
Grade 6		
$\bar{X}$	66.67	55.59
(n)	(9)	(37)
adjusted $\bar{X}$	69.63	54.87**
Grade 7		
$\bar{X}$	61.80	68.26
(n)	(10)	(27)
adjusted $\bar{X}$	67.12	66.28

Reading	1-year	Control
Grade 3		
$\bar{X}$	39.00	46.57
(n)	(15)	(41)
adjusted $\bar{X}$	42.18	45.40
Grade 4		
$\bar{X}$	50.26	57.04
(n)	(19)	(22)
adjusted $\bar{X}$	49.61	57.61$^{\Delta}$
Grade 6		
$\bar{X}$	61.25	51.94
(n)	(8)	(34)
adjusted $\bar{X}$	61.01	51.99
Grade 7		
$\bar{X}$	69.37	68.00
(n)	(8)	(26)
adjusted $\bar{X}$	73.23	66.81

$^{\Delta}$ $p \leq .10$

** $p \leq .01$

Table 14: Adjusted and unadjusted post mean scores ($\bar{X}$) on Math and Reading anchor items, controling for pre-levels, for two years of tutoring (E_2), one year (E_1), and control group (C)*

	E_2	E_1	C
Math 4			
$\bar{X}$	55.11	58.77	60.05
(n)	(18)	(21)	(21)
adjusted $\bar{X}$	56.48	58.65	59.00
Read 4			
$\bar{X}$	53.40	50.27	57.05
(n)	(15)	(19)	(22)
adjusted $\bar{X}$	55.58	50.23	55.59
Math 7			
$\bar{X}$	63.89	61.80	68.26
(n)	(9)	(10)	(27)
adjusted $\bar{X}$	66.35	67.42	65.36
Read 7			
$\bar{X}$	70.50	69.38	68.00
(n)	(8)	(8)	(26)
adjusted $\bar{X}$	70.24	72.91	66.99

*No statistically significant differences were noted.

standard score (or z-score) was computed. Using class means and standard deviations a z-score was calculated for each child per test, which served as an indicator of his relative standing compared to his classmates.

In Table 15 the average z-scores are presented by test for both control children and children tutored for one year. Looking first at Mathematics, one finds that tutored children either improved their relative class standing more than the control children or held their position while that of C dropped. In Grade 6, tutored children made marked gains, moving from a position 2/3 of a standard deviation below the average class score to an average position slightly above their class means.

Focussing on Reading, a different picture is found. In all grades except Grade 4, little change was noted by either tutored or control children. In Grade 4 the control group improved its position while the tutored group dropped. The poor performance of the tutored children in this grade was already observed in the overall achievement scores (Table 9).

In Table 16, z-scores are presented by group for all four testings per subject matter. In the last column, the differences between the group's relative achievement levels at the start of the two-year period and at the end have been calculated. Results show that in the area of Mathematics, a drop in position occurred in the lower grades for both experimental groups (E_2 and E_1) while in the upper grades a definite improvement was marked.

With respect to Reading, only the group tutored for two years in the lower grades showed gains. In the upper grades no clear-cut picture was detected: the rest of the class (R) dropped in rank, the two-year group stayed the same and the one-year group and control group both improved.

Research groups were compared with respect to how many children actually altered their class position between testings. For this comparison, a tally was made per group of the number of children who had either increased or decreased their rank by a least one standard deviation.

Comparisons are made in Table 17 by test between children with one year of tutoring and their control group with respect to increases (↑),

Table 15: Average pre and post z-scores for Math and Reading tests for children tutored one year and control group

	1-year	Control
Math 3		
pre z	-.50	-.38
post z	-.50	-.70
(n)	(18)	(42)
Math 4		
pre z	-.87	-.36
post z	-.77	-.34
(n)	(21)	(21)
Math 6		
pre z	-.66	-.30
post z	+.12	-.50
(n)	(9)	(37)
Math 7		
pre z	-1.10	-.23
post z	-.75	-.29
(n)	(10)	(27)

	1-year	Control
Read 3		
pre z	-.79	-.45
post z	-.77	-.41
(n)	(15)	(41)
Read 4		
pre z	-.38	-.53
post z	-.64	-.35
(n)	(19)	(22)
Read 6		
pre z	-.27	-.47
post z	-.18	-.46
(n)	(8)	(22)
Read 7		
pre z	-.73	-.15
post z	-.67	-.17
(n)	(8)	(27)

Table 16: Average z-scores for all groups on all tests (T_I - T_{IV}) per school subject

		T_I*	T_{II}	T_{III}	T_{IV}	T_I-T_{IV}
Math 3,4	(n)					
E_2	(18)	-.50	-.50	-.51	-.82	-.32
E_1	(21)	-.39	-1.10	-.87	-.77	-.38
C	(21)	-.38	-.30	-.36	-.34	+.04
R	(177)	.18	.25	.23	.25	+.07
Read 3,4						
E_2	(15)	-.79	-.77	-.76	-.53	+.26
E_1	(19)	-.56	-.40	-.38	-.64	-.08
C	(22)	-.36	-.41	-.53	-.35	+.01
R	(155)	.22	.21	.22	.21	-.01
Math 6,7						
E_2	(9)	-.66	.12	-.75	-.48	+.18
E_1	(10)	-.87	-1.16	-1.10	-.75	+.12
C	(27)	-.09	-.26	-.23	-.29	-.20
R	(110)	.22	.19	.29	.22	0
Read 6,7						
E_2	(8)	-.27	-.18	-.49	-.28	-.01
E_1	(8)	-.78	-.24	-.73	-.67	+.11
C	(26)	-.38	-.53	-.15	-.17	+.21
R	(109)	.26	.23	.20	.14	-.12

*T_I indicates the first testing, T_{II} the second testing, etc.

Table 17: Percentage of children changing z-score position by one standard deviation during one year, for control and one year tutored children

	1-year	Control
Math		
GR 3		
↑	8	10
=	75	67
↓	17	23
(n)	(24)	(48)
GR 4		
↑	10	14
=	85	76
↓	5	10
(n)	(21)	(21)
GR 6		
↑	21*	2
=	79	85
↓	0	13
(n)	(19)	(39)
GR 7		
↑	30	7
=	70	82
↓	0	11
(n)	(10)	(27)

Table 17 (cont'd)

	1-year	Control
Reading		
GR 3		
↑	16	17
=	74	75
↓	10	8
(n)	(19)	(48)
GR 4		
↑	11	13
=	68	83
↓	21	4
(n)	(19)	(23)
GR 6		
↑	17	8
=	72	73
↓	11	19
(n)	(18)	(37)
GR 7		
↑	22	12
=	67	77
↓	11	12
(n)	(9)	(26)

*Chi-square significant at $p \leq .05$.

decreases (↓) and maintenance (=) of class standing. A significant difference is noted in Mathematics between groups in Grade 6 in which more children improved their position and fewer children dropped in standing in the tutored group as opposed to in the control group. A similar trend can be observed in Mathematics in Grade 7 and to a lesser extent in Reading in Grades 6 and 7.

In Reading in Grade 4, a drop was noted for a relatively higher proportion of tutored children than for control children, this corresponding to the other observations reported above.

In Table 18 similar comparisons are made over the two-year period per test by research group. First of all, it seems that more children in the tutored groups (both E_2 and E_1) tended to have altered their positions in general, as compared to the control group. However, in many cases changes in position occurred as frequently in a negative direction as in a positive one. No significant differences are noted among groups, nevertheless it should be pointed out that in Math Grades 6, 7, in E_2 more children tended to improve than regress, while in C the reverse was true. The E_1 group had an equal number of children who improved as went down in relative position.

An attempt was made to examine changes in class standing on the basis of the amount of scholarship awarded to the tutor. The assumption was that if more time on tutoring does contribute to greater academic progress, then this should be reflected here. (It should be recalled that scholarship award is directly related to the number of tutoring sessions held.)

The results are presented in Table 19. The different grade levels have been combined and only one year of tutoring has been examined. A slight relationship in the direction predicted cna be observed. Children whose tutors received a full scholarship award tended to improve their relative position more often than lower it in both school subjects. In the other groups there tended to be about as many children who improved their position as lowered it. The only exception was in Reading among those children whose tutors received a minimal scholarship. In this case more children regressed than improved.

Summary of Cognitive Results

Taking into account the various data analyses which have been presented here, a certain picture emerges. First of all, tutored children tended to manifest greater gains than the control group more often and more consistently in the area of Mathematics as opposed to Reading. The most

Table 18: Percentage of children changing z-score by one standard deviation over two-year period by research group

	E_2	E_1	C
Math			
GR 3,4			
↑	5	10	5
=	79	71	90
↓	16	19	5
(n)	(19)	(21)	(21)
GR 6,7			
↑	22	10	7
=	78	80	78
↓	0	10	15
(n)	(9)	(10)	(27)
Read			
GR 3,4			
↑	20	21	9
=	67	58	82
↓	13	21	9
(n)	(15)	(19)	(23)
GR 6,7			
↑	12	22	11
=	76	56	81
↓	12	22	8
(n)	(8)	(9)	(26)

Table 19: Distribution of gains and losses in relative class position by tutor scholarship for children tutored one year as compared to control group (C)

	Scholarship Award			
	Full	Partial-High	Partial-Low	C
Math				
↑	15%	22%	5%	10%
=	81%	56%	90%	80%
↓	4%	22%	5%	10%
(n)	(46)	(9)	(19)	(48)
Reading				
↑	18%	20%	6%	10%
=	72%	60%	75%	78%
↓	10%	20%	19%	12%
(n)	(39)	(10)	(16)	(49)

significant change occurred in Mathematics among the children tutored for one year in Grade 6. It must be noted that the advantage of the tutored groups is only slight but nevertheless consistent. It is observed across grades. It is stronger for children tutored one year, however in the upper grades children tutored for two years were also found to have benefited.

In the area of Reading, the picture is less clear. The children tutored for one-year in Grade 4 stand out in a negative way, in that, as compared to other groups, they did not appear to have made any progress during the school year. Children tutored for two-years in the lower grades seem to have benefited as seen by both their progress on anchor items and an improvement in their class standing as measured by z-scores. With respect to the older children those tutored for one year have on the average made slightly more progress than the other groups.

To summarize, three points should be made. First of all, one cannot claim that tutoring has brought these children, on the average, up to the level of the rest of the class. After two years there still remained greater similarity in scores between the tutored children and control group than between them and their other classmates.

Secondly, there did not appear to be an advantage of two years of tutoring over one year. Greatest gains in achievement tended to occur during the first year of tutoring and there was no indication of an accumulative effect except perhaps in the area of Reading in the lower grades.

Thirdly, there appeared to be a slightly greater advantage accrued from tutoring in the upper grades than in the lower grades. This was observed particularly in Mathematics and to a lesser extent in Reading.

The results presented in this chapter will be discussed more fully in the discussion at the end of the report.

V. Comparisons on Social and Affective Measures

Perach aims at effecting changes in other areas besides the cognitive domain. As a result of assistance with school, social and behavioral problems, tutored children are expected to exhibit better attitudes towards themselves and towards the school context. These changes may be reflected in a number of ways, for example, in increased self-confidence in school, higher motivation to achieve, a more positive self-concept, and/or greater social acceptance by peers.

In this section the different research groups are compared on a number of these social and affective variables. For the most part, the data on these topics were provided by the personal questionnaire which was administered four times to all groups over the two-year period. One measure, however, was a construct of the administration of the achievement tests. This measure was labelled "self-confidence in taking a test" and consisted of the number of items answered on the test.

Self-Confidence in Testing

A close inspection of the achievement tests revealed that in many cases they had not been answered in full. In some instances children would begin a test and then, either finding it too difficult or not feeling like trying, would give up after answering only a few items. Other times tests were marked sporadically, test items having been answered here and there throughout the test.

This phenomenon was observed relatively often for those children recommended for tutoring (groups E_2, E_1 and C) and was almost non-existent for the other children (R). Moreover, it was particularly characteristic of their answering patterns on the Mathematics tests, while in Reading there was a greater tendency to attempt the entire test. Consequently, it was felt that a measure of how many items a child answered on the Math test could be used to indicate his self-confidence in the subject matter as well as his willingness to be tested.

Accordingly, the average number of items answered was calculated per group for each of the Mathematics examinations. Since the number of items

varied per test, these averages were converted to percentages, yielding the average percentage of Math test answered by group. The resulting figures are presented numerically in Table 20 and pictorially in Figure 4.

As can be seen, all groups answered a greater proportion of test items at the end of the year than they had at the start, apparently a direct result of learning during the school year. However, in Grades 3, 4 and 7, children tutored for one year were found to have increased the proportion of items answered more than children in the control group. In Grade 6 both groups changed equally. With respect to children tutored for two years, one finds that in Grade 7 they went up more than the control children while in Grade 4 the opposite was true.

Returning to Figure 2 (p. 31) in which the change in test scores was depicted, one finds a great similarity between the arrow lengths in this Figure and the present one. This similarity means that the greater self-confidence exhibited at the end of the year in Mathematics by these children directly corresponds to their actual strides made in this area.

One exception to this observation was found in the case of Grade 6. The tutored children made considerably greater gains than the control children in achievement however this was not reflected by an increased tendency to answer on more test items. It seems that at this grade level, as opposed to the others, both E and C children tended to answer a relatively high proportion of test items from the start and so, little change could be expected for both groups between testings.

Sociometric Measures

Two sociometric questions were put to the children: 1) next to whom would they most want to sit in class and 2) next to whom would they least want to sit in class (see Appendices A3 and A6). Each child was subsequently assigned two sociometric scores consisting of the number of times he or she was selected positively by classmates of the same sex and the number of times he or she was rejected by them. It was decided to take only same-sex choices since it appeared to be very rare for a child to want to sit next to another of the opposite sex and since rejections often included only oppostie sex classmates. Moreover, rejections across sex-lines tended often to include those children who were most popular

Table 20: Mean percentage of items answered on Math tests by research groups

	(n)	pre	post
Grade 3 - 24 items			
E	(18)	77%	87%
C	(44)	72%	76%
Grade 4 - 27 items			
E_2	(18)	79%	82%
E_1	(21)	72%	84%
C	(23)	79%	88%
Grade 6 - 28 items			
E	(10)	88%	92%
C	(37)	85%	89%
Grade 7 - 31 items			
E_2	(10)	75%	86%
E_1	(10)	72%	85%
C	(27)	82%	87%

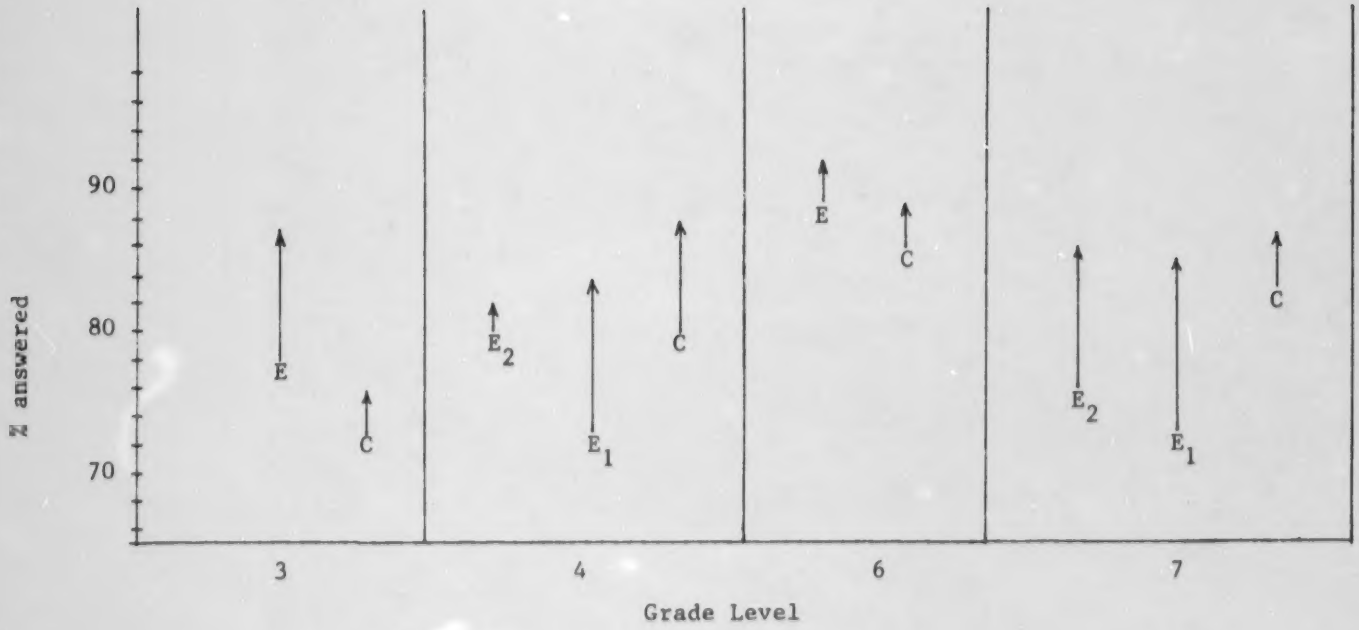

Figure 4: Graphical representation of percentage of items answered on Math test per group*

* Arrow head located at post-test position.

among their same-sex peers. Thus a clear picture of social acceptance could not be obtained if sociometric scores included both same and opposite sex classmates.

In order to standardize scores so that they could be combined across classes and later compared, the following calculations were made. First of all, for each class the average number of positive and negative scores was computed by sex for each research group. These averages were then divided by the number of same sex children in the class, yielding the proportion of positive and negative votes per group out of the total number possible.

For purposes of comparison the individual class standardized scores were combined by weighting the class means to yield an overall mean for each sex by grade level. Likewise, sex means were weighted to give an overall mean for all of the children by research group per grade level. These scores are presented in Table 21. For example, it can be seen that the Perach children in Grade 3 (E) received, on the average, positive votes from 19% of their same-sex classmates on the pre-test and from 20% of them on the post-test.

Examination of the last column in this table, i.e., the difference between positive and negative scores, indicates that at all grade levels the children who were tutored tended from the start to be less accepted by their peers than the control children. These differences were most prominent in the upper grades. Looking at post-test scores in this column, one finds that in nearly every instance sociometric scores decreased at about the same rate per group on the second testing. One exception stands out however: children tutored for one year in Grade 7. In this case the children considerably improved their level of social acceptance. Whether or not this exceptional change was an indirect result of the tutoring is difficult to ascertain. Moreover, the relatively small group size in this case (n=7) may have given undue weight to a drastic change in the social acceptance of only one or two children, thus "inflating" the group's actual change in position.

Overall, however, the general impression received from the sociometric scores is that tutoring did not appear to have had an impact on the children's popularity.

Table 21: Sociometric scores for tutored (E_2 and E_1) and control (C) groups

	Positive (P)		Negative (N)		P-N		(n)
	pre	post	pre	post	pre	post	
Grade 3							
E	.19	.16	.20	.18	-.01	-.02	(20)
C	.19	.16	.17	.20	+.02	-.04	(57)
Grade 4							
E_2	.19	.15	.28	.29	-.09	-.14	(20)
E_1	.19	.16	.26	.29	-.07	-.13	(27)
C	.19	.23	.19	.22	0	+.01	(32)
Grade 6							
E	.18	.17	.23	.25	-.05	-.08	(11)
C	.31	.31	.18	.21	+.13	+.10	(35)
Grade 7							
E_2	.15	.14	.25	.29	-.10	-.15	(11)
E_1	.25	.43	.33	.14	-.08	+.29	(7)
C	.25	.27	.16	.25	+.09	+.02	(28)

Affective Dimension

The personal questionnaires administered at all grade levels were highly similar to each other, in all cases devoted mainly to school self-concept and attitudes. Pre- and post-test means and standard deviations are presented by group by grade level on each of the items in Tables 22-25.

Grade 3. Few significant changes are noted comparing pre- and post-tests within groups. The tutored group tended to exchange books more often in the library, however their self-evaluation as students dropped. No significant changes were observed for the control group. As for the rest of the class, the only noteworthy change was a reduced perceived popularity.

Grade 4. Again, few changes were significant. All groups reported doing homework less at the end of the year and the control group reported on lower classroom participation (the trends being similar for the tutored children). The rest of the class had a lower opinion of themselves as students and said they obeyed their teacher less. Trends in the same direction were observed for tutored and control groups.

Grade 6. At this grade level control children reported reading books less frequently at the end of the year, while a reverse trend was found for the tutored group and the rest of the class. The rest of the class also viewed themselves more critically as students and were less satisfied with their progress made in school at the end of the year. With regards to the first, similar trends were noted for both E and C. Concerning the second, however, E reported equal satisfaction in both pre- and post-tests while C tended to be less satisfied at the end of the year.

Grade 7. Both groups of tutored children and those in the rest of the class perceived themselves as less popular at the end of the year. The control group on the other hand viewed themselves as more popular. In addition, this group tended to report doing homework less often at the end of the year, while little change was noted in the reports of the tutored children.

Overall, there were very few changes noted on the items from the personal questionnaire. Across grade levels all of the children remained fairly constant in their responses. When changes were noted, all groups tended to move in the same direction. Perhaps the only noteworthy exception is seen in Grades 3 and 6 with respect to exchanging books at the library and book-reading. These were found to increase at the end of the year for tutored children and decrease for control children.

Table 22: Pre and post test scores on personal questionnaire items and school self concept index - Grade 3

$\bar{X}$
s.d.
(n)

Question	E		C		R	
	Pre	Post	Pre	Post	Pre	Post
Do you participate in class?	3.50	3.40	3.21	3.09	3.37	3.38
	.97	.97	1.01	.83	.77	.72
(range 1 - 4)	(10)		(34)		(186)	
Do you do your homework?	3.67	3.78	3.49	3.40	3.76	3.72
	.50	.44	.61	.81	.53	.51
(range 1 - 4)	(9)		(33)		(192)	
What kind of pupil are you?	3.38	3.00 $^{\Delta}$	3.19	3.11	3.41	3.38
	.87	.82	.95	.92	.84	.73
(range 1 - 4)	(13)		(36)		(185)	
Do you obey your teacher?	3.77	3.85	3.50	3.58	3.82	3.79
	.60	.38	.78	.69	.47	.47
(range 1 - 4)	(13)		(36)		(187)	
Are you disruptive in class?	1.40	1.20	1.71	1.74	1.50	1.55
	.84	.42	1.04	.98	.90	.84
(range 1 - 4)	(10)		(38)		(182)	
How often do you exchange library books?	2.73	3.36 $^{\Delta}$	3.06	2.64	3.21	3.27
	1.35	1.21	1.20	1.30	1.16	1.11
(range 1 - 4)	(11)		(33)		(182)	
How well-liked are you in class?	2.56	2.44	2.39	2.55	2.71	2.49 **
	1.13	.73	1.03	.87	.92	.84
(range 1 - 4)	(9)		(33)		(184)	
School self-concept index	13.88	13.88	12.97	12.97	14.10	13.93
	2.53	1.55	2.69	2.53	1.82	1.91
	(8)		(29)		(162)	

Within group differences significant at
$^{\Delta}$ $p \leq .10$
* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

Table 23: Pre and post test scores on personal questionnaire items and school self concept index - Grade 4

$\bar{X}$
s.d.
(n)

Question	E_2		E_1		C		R	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Do you participate in class?	3.00	2.78	3.44	3.28	3.27	2.88 *	3.29	3.32
	.91	1.00	.82	.61	.72	.71	.78	.69
(range 1 - 4)	(18)		(25)		(26)		(207)	
Do you do your homework?	3.50	3.23 ^	3.52	3.20 ^	3.54	3.17 *	3.81	3.56 ***
	.79	.88	.71	.76	.51	.76	.47	.63
(range 1 - 4)	(18)		(25)		(24)		(207)	
What kind of pupil are you?	2.89	2.63	3.12	2.92	2.74	2.43	3.33	3.20 **
	.88	.96	.83	.81	.86	.84	.74	.80
(range 1 - 4)	(19)		(25)		(23)		(204)	
Do you obey your teacher?	3.68	3.47	3.68	3.60	3.76	3.64	3.79	3.72 ^
	.48	.84	.75	.58	.44	.49	.44	.55
(range 1 - 4)	(19)		(25)		(25)		(204)	
Are you disruptive in class?	1.47	1.53	1.64	1.72	1.85	1.65	1.50	1.54
	.70	.77	.95	1.02	.97	.89	.76	.73
(range 1 - 4)	(19)		(25)		(26)		(208)	
How often do you exchange library books?	2.95	3.05	3.04	2.92	2.88	3.23	3.36	3.33
	1.31	1.31	1.27	1.19	1.37	1.21	1.09	1.03
(range 1 - 4)	(19)		(25)		(26)		(208)	
How well-liked are you in class?	2.50	2.39	2.64	2.76	2.43	2.74	2.52	2.53
	.79	.61	1.04	1.13	.79	1.01	.78	.78
(range 1 - 4)	(18)		(25)		(23)		(202)	
School self-concept index	12.83	12.11 ^	13.44	12.68	12.86	11.86 *	13.86	13.53 *
	2.48	2.52	1.92	2.17	1.80	2.33	1.87	2.08
	(18)		(25)		(21)		(200)	

Within group differences significant at
^ $p \leq .10$
* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

Table 24: Pre and post test scores on personal questionnaire items and school self concept index - Grade 6

$\bar{X}$
s.d.
(n)

Question	E		C		R	
	Pre	Post	Pre	Post	Pre	Post
Do you participate in class?	3.00	2.73	2.98	2.95	3.17	3.13
	.63	.65	.70	.75	.59	.69
(range 1 - 4)	(11)		(40)		(130)	
Do you do your homework?	3.20	3.10	3.45	3.38	3.64	3.59
	.63	.74	.63	.54	.53	.58
(range 1 - 4)	(10)		(42)		(129)	
What kind of pupil are you?	2.64	2.36	2.70	2.60	3.09	2.98 *
	.67	.67	.61	.74	.66	.73
(range 1 - 4)	(11)		(40)		(129)	
Are you satisfied with your progress in school?	3.64	3.64	3.32	3.20	3.58	3.35 ***
	.51	.51	.69	.68	.58	.72
(range 1 - 4)	(11)		(41)		(129)	
Are you disruptive in class?	1.36	1.27	1.59	1.59	1.45	1.47
	.51	.65	.77	.74	.65	.62
(range 1 - 4)	(11)		(41)		(130)	
How many books did you read in last month?	3.45	3.64	3.85	3.39 *	4.01	3.88
	.93	.67	1.08	1.11	.98	1.13
(range 1 - 5)	(11)		(41)		(130)	
How well-liked are you in class?	2.90	2.70	3.09	3.06	2.89	2.80
	1.45	1.25	1.31	1.43	1.28	1.15
(range 1 - 5)	(10)		(35)		(126)	
School self-concept index	12.60	13.10	12.55	13.34 **	13.48	13.90 ***
	1.65	1.10	1.54	1.34	1.66	1.45
	(10)		(38)		(125)	

Within group differences significant at
△ $p \leq .10$
* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

Table 25: Pre and post test scores on personal questionnaire items and school self concept index - Grade 7

$\bar{X}$
s.d.
(n)

Question	E_2 Pre	E_2 Post	E_1 Pre	E_1 Post	C Pre	C Post	R Pre	R Post
Do you participate in class?	3.00	3.10	3.00	3.29	3.00	2.88	3.24	3.16
	.67	.74	.58	.49	.42	.74	.57	.63
(range 1 - 4)	(10)		(7)		(24)		(103)	
Do you do your homework?	3.60	3.50	3.43	3.43	3.54	3.33 $^{\Delta}$	3.70	3.63
	.52	.53	.54	.54	.51	.48	.54	.52
(range 1 - 4)	(10)		(7)		(24)		(104)	
What kind of pupil are you?	2.80	2.60	2.57	2.29	2.42	2.67	3.04	2.91 $^{\Delta}$
	.63	.70	.79	.49	.50	.70	.65	.70
(range 1 - 4)	(10)		(7)		(24)		(99)	
Are you satisfied with your progress in school?	3.50	3.30	3.00	3.00	3.39	3.22	3.34	3.21 *
	.53	.95	.58	.82	.58	.74	.61	.59
(range 1 - 4)	(10)		(7)		(25)		(101)	
Are you disruptive in class?	1.30	1.30	1.43	1.43	1.56	1.48	1.39	1.42
	.48	.48	.79	.54	.51	.59	.53	.53
(range 1 - 4)	(10)		(7)		(25)		(104)	
How many books did you read in last month?	3.10	3.30	2.71	2.86	3.00	3.48 *	3.73	3.66
	.88	1.34	.95	1.46	.82	1.16	.99	1.13
(range 1 - 5)	(10)		(7)		(25)		(104)	
How well-liked are you in class?	3.00	2.00 *	3.29	2.71 $^{\Delta}$	2.74	3.00	2.96	2.76 $^{\Delta}$
	1.41	.94	1.38	1.25	1.42	1.28	1.22	1.10
(range 1 - 5)	(10)		(7)		(23)		(102)	
School self-concept index	13.10	12.90	12.57	12.57	12.65	12.48	13.61	13.31 *
	1.73	1.85	1.62	1.51	.89	1.65	1.43	1.61
	(10)		(7)		(23)		(98)	

Within group differences significant at

$^{\Delta}$ $p \leq .10$
* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

Since many items were similar on the questionnaires for the different grade levels, an attempt was made to create a school self-concept index which was identical for all. Four questions were combined for this purpose: participation in class, homework, disruptive in class, and self-evaluation as student (Cronbach α = .52). It was felt that an index would be more valid as well as reliable than the individual items. Looking at the results presented in Tables 22 - 25 one sees that within each grade level, differences between pre-test and post-test were in the same direction for all groups. In other words, when school self-concept improved between testings, it improved for all groups at that grade level. Likewise, if it dropped, then it dropped for everybody. Perhaps the only item of note here is that the children in the rest of the class consistently hold a higher regard of themselves as compared to the other children. Since their achievement is consistently higher as well, this means that overall the children tested here have a more or less realistic evaluation of themselves as students.

VI. Discussion

The data presented in this report indicated that tutoring was having some effect on the children in the cognitive realm, particularly in Mathematics. In the affective area, results revealed no differences among the various tutored and untutored groups concerning school self-concept, social self-concept or social acceptance by peers. On one behavioral measure, namely, "willingness to test", there was a consistent difference among groups. In this case tutored children appeared more self-confident and were, thus, willing to try harder in the testing situation.

Comparison of Younger and Older Children

One of the main arguments against working with younger children was that technical difficulties related to the child's lack of mobility would encumber the tutoring relationship. Not only would the onus of travel fall on the tutor, but the type of tutoring activities possible would be restricted, requiring greater imagination on the part of the tutor in order to vary sessions. Based on the tutors' own fears it was thought that in addition, building a satisfying relationship with a younger child would be more difficult.

The data showed that these apprehensions were on the whole unfounded. Only in the case of Grade 3 children was it necessary for tutoring sessions to be held mainly at the child's house. Apparently, children in Grade 4 are already sufficiently mobile to enable them to meet outside their homes.

If any problems did arise, they tended to occur among the oldest children in this study, namely those in Grade 7. Tutors of these children reported somewhat more difficulty in holding meetings and tended to be less satisfied with their relationships with the tutored child. These difficulties were further reflected in the fact that the scholarship awards for tutors of Grade 7 children tended to be the lowest.

Despite these problems, inspection of tutoring outcomes indicates that working with older children was somewhat more fruitful in the cognitive domain. Gains in achievement were noted more often for the children in Grades 6 and 7 than for those in Grades 3 and 4. Although tutored groups tended to do better than control groups in Mathematics at all grade levels, in the upper grades, particularly in Grade 6, this tendency was even stronger. In Reading few advantages were witnessed for the tutored over the untutored

however, any advantages that were detected, occurred more frequently in the higher grades.

In short, tutoring older children seemed to be somewhat more difficult, however the cognitive gains accrued from the tutoring experience seemed to be greater. As a possible explanation for these findings, one could assume that older children tend to be more involved with other activities which might compete with tutoring for their time. On the other hand, motivation to achieve should be stronger among the older children since they are approaching high school and the time for making critical educational decisions. Higher motivation may result in magnifying the impact of the tutoring sessions. Thus, though fewer meetings take place, each tutoring session is in itself more productive.

Despite the results, it cannot be unequivocally stated that Perach should only work with older children. Some cognitive gains were noted for lower grade children. Also, the very fact that tutors found it easier working with younger children means that it would be a shame not to include them in the project. Perhaps a more structured approach is needed with younger children in order for tutoring to yield greater cognitive results.

Comparison of One Year to Two Years of Tutoring

The general expectation was that more tutoring would produce better outcomes. Thus, the results in this context were disappointing. Children tutored for two years did not appear to be at an advantage over those tutored for only one year. Perhaps the only exception was observed in the case of Reading scores in the lower grades.

A partial explanation for these results may be discerned from information which was obtained from the tutor questionnaire. It seems that tutoring activities tended to differ for children in the project for a second year. During the first year of tutoring, activities tended to be more academic or school-related, while during the second year enrichment was stressed more.

The reason for this change in emphasis is difficult to determine. It is possible that tutors, knowing that their children had been tutored before, decided on their own to "supplement" the learning which had taken place the first year. Perhaps project coordinators or the children's teachers advised them to do so. It is also equally possible that the

children themselves indicated in one way or another that they had had enough of study and wanted other kinds of activities.

In any case, during the second year of tutoring, activities were different than they had been during the first year and, thus, little evidence of a cumulative cognitive effect was found. If two years of tutoring are expected to produce greater academic achievement, then tutors must be instructed to continue to emphasize school learning during the second year as well as in the first.

This point leads us to another important issue, namely Perach's goals. As discussed in a previous report (Eisenberg et al., 1980), Perach's goals are neither specific nor clearly defined. Tutoring activity varies greatly from one tutor-child pair to another and is determined freely by the tutor. Although data show that a good portion of tutoring time is spent on academic activities, the amount, content and type of these activities are up to the individual tutor. Thus, tutoring in Perach is meant in the broad sense of the word and cannot necessarily be equated with help in one school subject or another.

This situation makes evaluation of the tutoring effect very difficult. In the case of the children tutored for two years in this study, it might mean that although no great cognitive benefits were discerned from the additional year in Perach, other positive changes may have resulted in areas not measured here. Consequently, a clearcut recommendation in favor or against two years of tutoring is difficult to make. What can be stated is that two years of tutoring as it was carried out here does not result in significantly greater results in school achievement, self-concept and social acceptance as compared to only one year of tutoring.

Some Additional Comments

The general impression received from the data presented in this report is that tutoring "Perach-style" has only a weak effect on cognitive gains. One of the reasons for this is very likely the unstructured tutoring program. A structured program would have very specific goals, such as improved reading ability, as well as careful training of tutors in a technique designed to achieve these goals. Studies on other projects have indicated that structured programs tend to yield greater cognitive results in those being tutored than unstructured programs (Goodlad, 1979, pp. 87-88).

Another possible reason for Perach's weak impact may be that the children selected to the project are not really suited to it as it now exists. Perach, as originally envisioned, was to aid "the top 1/3 of the disadvantaged population" (Attar, 1976). The idea was to help those children who just needed a little "push" in order to succeed in school. In reality it seems that a good proportion of Perach children come from the bottom half of the disadvantaged group. Thus, it is possible that if the right children were actually brought to Perach, the program would have the effect envisioned.

Unfortunately, getting the "right" children into Perach is not simple. There is an outright conflict of interests between Perach and teachers in disadvantaged schools. The teachers want to provide help to the slowest children in their classes so as to bring them up to the level of the others, and, they view Perach as one source of assistance. They do not want to give Perach their best pupils (who are really the top of the disadvantaged and who lag behind middle class children in other schools) since by doing so they will create a greater gap between the better and slower pupils in their classes. They are fully aware that the more heterogeneous the class, then the more difficulty they will have teaching.

Perach has a number of options before it but first a clearer definition of goals is mandatory. If it is decided that academic success is the primary goal and that it is desirable to increase the cognitive impact of the project, then a greater effort must be made to get the "right" children into Perach. In addition, or instead, Perach could tailor its style of tutoring to the needs of the slower children in disadvantaged schools, an approach which might mean the creation of a more structured tutoring program.

On the other hand, if it is decided that cognitive gains are only secondary goals, then further evaluation studies must be carried out to see whether the project as it stands at present is achieving whatever results are considered primary.

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Appendix A1: Sample Questions from Lower Grade Mathematics Examinations

A. Grade 3 (Cronbach α Reliability Coefficient =)

1. 305
   -127

   a. 288
   b. 278
   c. 188
   d. 178

2. 200 X 0 =

   a. 0
   b. 1
   c. 200
   d. 201

3. One table has 4 legs. How many legs are there on 13 tables?

   a. 9
   b. 17
   c. 42
   d. 52

B. Grade 4 (Cronbach α Reliability Coefficient =)

1. 74 - 5 - ☐ = 0

   a. 74
   b. 5
   c. 69
   d. 79

2. Continue the series of numbers and indicate which number appears in the last box.

97	93	89		

   a. 77
   b. 86
   c. 80
   d. 83

3. Yosef bought a book for 18 lira. He gave the storekeeper a 50 lira bill. How much change did he receive?

   a. 50 + 18
   b. 50 ÷ 18
   c. 50 - 18
   d. 50 X 18

Appendix A2: Sample Questions from Lower Grade Reading Examinations

A. Grade 3 (Cronbach α Reliability Coefficient =)

1. We went into the barn and saw a calf. The calf's mother is a _____.

   a. goat
   b. cow
   c. horse
   d. sheep

2. The children played in the schoolyard. When they heard the buzzer, they ran to their classrooms. What did the buzzer tell them?

   a. that the lesson was over
   b. that recess had begun
   c. that there was no lesson
   d. that recess was over

3. A child went down the road with a jug of milk in one hand and a basket of eggs in the other. A friend asked him, "What was the color of the cow which gave the milk in your jug?" "The same color as the chicken which laid the eggs in my basket," he answered.

   1. How would you describe the question the friend asked?

      a. an easy question
      b. a long question
      c. a clever question
      d. a smart question

   2. How did the boy answer?

      a. incorrectly
      b. foolishly
      c. politely
      d. cleverly

B. Grade 4 (Cronbach ∝ Reliability Coefficient =)

During vacation Abraham went to visit his friend who had left the city with his family. Abraham loves the gardens, fields and quiet of the place where his friend lives more than the tall buildings, noise and automobiles next to his own house. When he went to visit his friend he helped him with his work in the garden and in the vineyard. He also helped take care of the animals in the stable, in the beehives and in the shed.

1. Where does Abraham's friend live?

   a. on a moshav
   b. on a kibbutz
   c. next to an agricultural school
   c. it's not clear from the story

2. Where does Abraham live?

   a. on a moshav
   b. in the city
   c. on a kibbutz
   d. it's not clear from the story

3. According to the story, which animals does Abraham not take care of?

   a. bees
   b. sheep
   c. cows
   d. horses

Appendix A3: Personal Questionnaire (Grades 3 and 4)

Before you are a number of personal questions. There are no right answers or wrong answers. Choose the answer for each question which fits you best.

1. Do you participate in class?
   a. always
   b. often
   c. rarely
   d. never

2. Do you do your homework?
   a. always
   b. usually
   c. sometimes
   d. never

3. Do you think the other children in your class like you?
   a. No one likes me
   b. A few children like me
   c. A lot of children like me
   d. All of the children like me

4. Are you disruptive in class?
   a. very much
   b. often
   c. rarely
   d. not at all

5. Do you exchange books in either the school library or the public library?
   a. no
   b. rarely
   c. often
   d. very often, every few days

6. Complete the following sentence.

   I am a _____ pupil.

   a. excellent
   b. good
   c. fair
   d. poor

7. Do you obey your teacher?

   a. always
   b. usually
   c. not often
   d. never

For the following questions you are asked to write the names of your classmates. You may write as many names as you want. Do not forget to write both personal and family names of each child you mention.

1. Next to which children would you most want to sit?

   _____
   _____
   _____
   _____
   _____

2. Are there children next to whom you do not want to sit? Who are they?

   _____
   _____
   _____
   _____
   _____

Appendix A4: Sample Questions from Upper Grade Mathematics Ecaminations

A. Grade 6 (Cronbach ∝ Reliability Coefficient = .85)

1. $9 - 7 = \square - 9$ What number goes in the box?

   a. 2
   b. 7
   c. 11
   d. 16

2. $21 \times 32 =$

   a. $(20 \times 32) + (1 \times 32)$
   b. $(2 \times 32) + (1 \times 32)$
   c. $(20 \times 30) + (1 \times 2)$
   d. $(21 \times 30) + (2 \times 30)$

3. $4 + 4 + 4 + 4 + 4 = \square \times 4$ What number goes in the box?

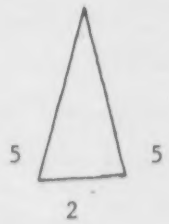
   a. 4
   b. 5
   c. 20
   d. 24

4. If four sticks are cut into quarters, how many pieces will there be?

   a. 1
   b. 4
   c. 8
   d. 16

5. What is the circumference of the triangle?

   a. 10
   b. 12
   c. 25
   d. 50



B. Grade 7 (Cronbach ∝ Reliability Coefficient = .87)

1. 1/2 + 1/3 + 1/4 =

a. 9/12
b. 11/12
c. 1 1/2
d. 1 1/6

2. How many hours are there in 150 minutes?

a. 2
b. 2 1/2
c. 3 1/2
d. 5

3. 200.1 - 199.0 =

a. 1.0
b. 1.1
c. 10.1
d. 11.1

Appendix A5: Sample Questions from Upper Grade Reading Examinations

A. Grade 6 (Cronbach α Reliability Coefficient = .80)

1. Our class went to Haifa by train and returned by bus. The nicest part of the trip was sailing from Haifa to Acre. How did we get to Acre?

   a. by bus
   b. by foot
   c. by boat
   d. by train

2. Yesterday it rained a little. The sun shone out between the gray clouds. Something colorful and wonderful appeared in the sky before our eyes. What did we see?

   a. a rainbow
   b. hail
   c. a cloud
   d. snow

3. Wherever Eitan went, he took his harmonica with him, and at every party people would dance or sing to the sound of it.

   When Eitan joined the army, he brought his favorite musical instrument with him, keeping it always in his shirt pocket, and in his spare time he would play lovely music. One night, when he was patroling around the settlement that his unit was guarding, gun shots were suddenly heard. The members of the settlement came immediately and found Eitan lying on the ground. He was hurt, but not severely. One of the bullets had hit the harmonica. It was smashed but the bullet had not penetrated his body. Because of his harmonica, he survived.

   1. What can be learned from this story?

      a. Keep your dearest thing in your pocket.
      b. Danger awaits both soldiers and civilians.
      c. An example of the proverb: "Both in life and in death they did not part".
      d. Some people's lives are saved by chance.

   2. Why did Eitan go on patrol around the settlement?

      a. In order to see if there are any gun shots.
      b. Because he liked to be alone at night.
      c. In order to guard the settlement.
      d. Because his entire unit went on patrol.

3. What is the prose style of the above passage?

   a. Descriptive
   b. Journalistic
   c. Conversational
   d. Humorous

B. Grade 7 (Cronbach α Reliability Coefficient = .86)

If you want to count the many usages that paper has, you will find that the list is almost endless. Nevertheless, there was a time that this common item was rare and precious. The same piece of paper that we throw absentmindedly into the waste-basket, was once bought at a high price and carefully kept. During hundreds of years in the history of Man, paper did not exist. People wrote on sheep-skin or goat-skin that had been prepared especially and was called parchment.

Two thousand two hundred years ago the Chinese discovered how to produce paper out of wood pulp. Later on the secret found its way to Europe. But for many years paper was produced by hand, without machines. Imagine yourself producing paper by hand, sheet after sheet. The process was simple enough, but it can be easily understood why only the rich could afford it.

The first machine for the production of paper was invented by a Frenchman called Louis Robert. According to today's standards, it was a simple machine. Since then, many European and American inventors have contributed to the development of more efficient machines which are used now for the production of paper. Now-a-days paper is used all over the world.

1. The process of paper production was first invented by

   a. An American
   b. The French
   c. The Chinese
   d. Louis Robert

2. Why was the process of producing paper by hand not satisfactory?

   a. It was too complicated
   b. The paper was of poor quality
   c. It was too slow
   d. It was secret

3. The main idea in the first paragraph of this story is

   a. That only lately there is a wide-spread usage of paper.
   b. That for several usages parchment is better than paper.
   c. That it is possible to invent different usages for paper.
   d. That paper should not be thrown into the waste-basket.

4. The man that wrote this story tried to

   a. Amuse us
   b. Teach us something new
   c. Change our feelings
   d. Write a beautiful story

Appendix A6: Personal Questionnaire (Grades 6 and 7)

In front of you are a number of personal questionnaires. There are no right or wrong answers. Select the answer for each question which best fits you.

1. Do you participate in class?

   a. always
   b. often
   c. rarely
   d. never

2. Do you do your homework?

   a. always
   b. usually
   c. sometimes
   d. never

3. Do you think your classmates like you?

   a. I am among the 3 most popular children in class
   b. I am among the 7 most popular children in class
   c. I am among the 12 most popular children in class
   d. I am fairly well-liked
   e. I am not liked at all

4. Are you disruptive in class?

   a. very much
   b. often
   c. rarely
   d. not at all

5. How many books have you read in the last month (other than school books)?

   a. seven or more
   b. 4 to 6
   c. 2 - 3
   d. one
   e. none

6. Are you in a youth movement or do you regularly attend a youth club or community center?

   a. yes which one?_____
   b. no

7. Complete the following sentence.

   I am a _____pupil.

   a. excellent
   b. good
   c. fair
   d. poor

8. Are you satisfied with your progress in school?

   a. very satisfied
   b. somewhat satisfied
   c. somewhat dissatisfied
   d. very dissatisfied

9. For the following questions, you are requested to write the names or your classmates only. You can write up to five names and don't forget to write both family and first names for each child that you mention.

   a. Who are the children in your class that you would most want to sit next to?

   _____
   _____
   _____
   _____
   _____

b. Are there any children in the class next to whom you do not want to sit? Who are they?

_____

_____

_____

_____

_____

Appendix A7: Tutor Questionnaire

Name:_____ University:_____

Major study area:_____ Year at school:_____

Name of tutored child:_____ Grade:___ School:_____

Please answer the following questions:

1. (a) Where do your tutorial meetings take place?
   1. Usually at my house
   2. Usually at the child's house
   3. Sometimes at my house and sometimes at the child's
   4. Other _____

   (b) According to what criteria is the location of meetings determined? _____
   _____

2. Is it difficult to meet regularly with your child?
   1. yes Why?_____
   2. no

3. How many times per week do you usually meet with your child?_____

4. Did you encounter any trouble establishing the initial relationship with the child?
   1. very much _____
   2. somewhat _____
   3. no, not at all

5. Are you satisfied with the kind of relationship which has developed between you and the child?
   1. very satisfied
   2. somewhat satisfied
   3. not very satisfied
   4. not satisfied at all

6. Now that you know the child well, in which area do you particularly want to help him or her? (Almost without a doubt there are several areas in which he needs help, however, select the most important one in your opinion.)

   1. School achievement. In which subjects in particular?_____
   2. Motivation to learn
   3. Social behavior
   4. Self-concept, self-confidence
   5. General enrichment
   6. Other_____

7. (a) Do you deal with material which is taught in school in the tutoring sessions? If yes, then indicate to what extent you do the following:

	Very much	Somewhat	Not at all
Cover material taught in class			
Do homework together			
Work on material taught in previous grades			
Other_____			

   (b) On which school subjects do you generally work?

   _____

8. What do you do with your child during tutoring sessions which are not devoted directly to studies?

   _____

   _____

9. Do you ever have difficulty "filling" up the time during a tutoring session? (Do you ever have trouble finding ideas for activities or subjects to make the meetings interesting and different?)

   1. often
   2. sometimes
   3. not at all

10. Have you ever turned for help in your work as a tutor to one of the following people? If yes, please fill out the following table.

	yes	# times	To what extent did he/she help?			Briefly describe the problem
			Very much	Somewhat	Not at all	
School teacher						
School counsellor						
Perach advisor at the university						
Perach coordinator						
Child's parents						
Other						

The extent to which the tutor becomes involved in the child's family depends on many different factors. Sometimes the tutor becomes "one of the family" and sometimes he barely knows the family. The following questions relate to your relationship with the child's family.

11. How often do you meet the child's parents (or one of them)?

    1. very often (nearly every week)
    2. infrequently
    3. almost not at all

    Explain the reasons for your answer. _____

    _____

12. Do you have any contact with the brothers and sisters of the child?

    1. He has no siblings - or - he's the only child living at home
    2. I have no contact with his siblings
    3. I have some contact with them
    4. I have close contact with some or all of them

13. How does your relationship (or lack of one) with the child's family affect your work with him?

    _____

    _____

14. In your opinion, has any change taken place in the child in any of the following areas since you began working with him?

	Great improvement	Some improvement	No change	Change for the worse
School achievement				
Motivation to learn				
Self-confidence, self-concept				
Behavior				
Other _____				

15. Have you had any feedback from the child's teacher and/or parents concerning the effect of the tutoring on him?

1. yes _____

_____

2. no

16. Is this your first year as a Perach tutor?

1. yes
2. no, I was a tutor before for a child in grade _____

Try to compare your previous experience as a tutor to your experience this year with respect to your relationship with him, the types of difficulties encountered, content of meetings, successes, etc.

_____

_____

_____

17. Are you considering the possibility of being a tutor again next year?

1. yes
2. no Why not? _____

If yes, do you have any preference regarding the age of the child to be tutored?

1. yes I prefer to work with a child in grade _____

because _____

2. no, I don't care

18. General comments: _____

_____